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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,206	09/17/2003	Ashim Biswas	42P17106	8300
8791 7590 02/16/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER EJAZ, NAHEED	
			ART UNIT 2611	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/666,206	Applicant(s) BISWAS ET AL.	
	Examiner Naheed Ejaz	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

With respect to figure 3, disclosure recites that Coset selector 360 is receiving two consecutive calculated indices $y'(n)$ and $y'(n+1)$ (page # 7, paragraph # 0025, lines 1-2) while figure 3 shows only one input ($y'(n)$) to the Coset selector 360 (figure 3).

Appropriate correction is required.

Claim Objections

2. Claims 3, 15 & 20 are objected to because of the following informalities:

- Claim 3 recites the limitations 'one of the two constellation points is less than or equal to the received symbol and another of the two constellation points is greater than or equal to the received symbol' the limitations are not disclosed in the Specification and makes it difficult to understand the invention in terms of claim language.
- Claim 15 also recites the similar limitations as mentioned above in claim 3 objection which is not disclosed in the Specification and makes it difficult to understand the invention in terms of claim language.
- As per claim 20, it recites the limitations 'hard disk proximate the constellation mapper' which is not clear because it is not disclosed in the Specification.

Clarification is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1- 21 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

4. Refer to claim 1 (taken as a whole), it recites an algorithm of manipulating the received symbol but the claim does not recite any useful, concrete and tangible result, therefore, it lacks the practical applicability of the claim invention (see MPEP 2106 & Interim Guidelines).

5. Refer to claim 10 (taken as a whole), it recites an algorithm of manipulating the received symbol but the claim does not recite any useful, concrete and tangible result, therefore, it lacks the practical applicability of the claim invention (see MPEP 2106 & Interim Guidelines).

6. Refer to claim 15 (taken as a whole), it recites an algorithm of manipulating the received symbol but the claim does not recite any useful, concrete and tangible result, therefore, it lacks the practical applicability of the claim invention (see MPEP 2106 & Interim Guidelines).

7. Refer to claim 20 (taken as a whole), it recites an algorithm of manipulating the received symbol but the claim does not recite any useful, concrete and tangible result, therefore, it lacks the practical applicability of the claim invention (see MPEP 2106 & Interim Guidelines).

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8. Claims 2-9, 11-14, 16-19 & 21 are also rejected under 35 U.S.C. 101 because they are based on rejected independent claims, claims 1, 10, 15 & 20 respectively.

9. Claims 1-21 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 4, 6 & 20^{21 ph} are rejected under 35 U.S.C. 102(e) as being anticipated by Dagdeviren (6,798,851).

12. As per claim 1, Dagdeviren teaches, 'A decoder, comprising: a constellation mapper circuit to determine two constellation points that are proximate a received symbol' (figures 2 & 5); 'an index mapper circuit to determine a constellation index corresponding to the received symbol based on the received symbol and the two constellation points that are proximate the received symbol' (figures 2 & 7).

Furthermore, Dagdeviren decodes the signal which corresponds to index of received signal after mapping and associating index with the received signals (figure 7) and

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comparator 120 (figure 5) access table 30 (figure 5) to identify the amplitude level in the table closest to the receive signal and the index associated with the identified amplitude level in the table 30 can then be associated with the received signal (col.11, lines 58-65) & (figures 4 & 7, col.10, lines 59-67, col.11, lines 1-5) which is equivalent to the claim limitations of having 'a coset selector circuit to receive successive constellation indices from the index mapper and to determine a number of nearest cosets to the successive constellation indices'.

13. As per claim 4, Dagdeviren determines the index that corresponds to the constellation points (figure 2) and which corresponds to the received symbol (figures 6 & 7, col.11, lines 42-67, col.12, lines 1-4).

14. As per claim 6, Dagdeviren discloses, 'combiners to generate at least one difference between the received symbol and at least one of the two constellation points that are proximate the received symbol (figure 1, element 22, col.4, lines 27-39), wherein the index mapper circuit further determines the constellation index corresponding to the received symbol based on the at least one difference' (figure 1, col.4, lines 40-56).

15. Claims 20 & 21 are rejected under the same rationale as mentioned in the rejection of claim 1 above. It is noted that Dagdeviren's constellation mapper is included in the decoder for the receiver circuitry of the modem and therefore, it can be implemented by a hard disk (figures 1 & 5, col.1, lines 11-14, col.3, lines 33-40).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 2, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851), as applied to claim 1 above, and further in view of Wei (5,953,376).

18. With respect to claim 2, Dagdeviren teaches all the limitations in the previous claim on which claim 2 depends but he fails to disclose the constellation points are the nearest two points to the receive symbol.

Wei discloses, 'the two constellation points are the nearest two points to the received symbol in a predetermined constellation of points' (col.5, lines 35-50, col.6, lines 13-54, col.13, lines 23-29).

It would have been obvious to one of the ordinary skill in the art, at the time invention was made, to implement the teachings of Wei into Dagdeviren in order to increase the data rate with high level of performance by increasing the effective minimum distance between the signal points of constellation and an average power constraint (received signal since power is associated with each signal) as taught by Wei (col.2, lines 60-65) thus enhance system performance.

19. Claim 10 is rejected under the same rationale as mentioned in the rejections of claims 2 & 6 above.

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20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in view of Wei (5,953,376), as applied to claims 1 & 2 above, and further in view of Barabash et al. (5,640,417) (hereinafter, Barabash).

21. As per claim 3, Dagdeviren and Wei teach all the limitations in the previous claims on which claim 3 depends but they fail to disclose constellation points to be less than and greater than to the received symbol.

In the same field of endeavor, Barabash discloses, 'one of two constellation points is less than or equal to the received symbol and another of the two constellation points is greater than or equal to the received symbol' (figure 2B) & (figure 3, col.7, lines 56-61) (it is noted that circle radius is associated with the constellation points which are radially spaced (figure 2B) which reads on claim limitations of having two constellation points, moreover, Barabash sets the threshold in order to correctly detecting the symbol (col.7, lines 26-55) , the threshold consists of a circle having a radius greater than the magnitude of the innermost symbols but less than the magnitude of the outermost symbols (col.7, lines 57-61) which reads on claim limitations of having two constellation points less than or equal to the received symbol and another of the two constellation points greater than or equal to the received symbol).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Barabash into Dagdeviren and Wei in order to correctly detect the received symbol by optimizing the decision radius of the circle where constellation points lie (col.7, lines 26-43) thus enhance the system reliability.

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22. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851), as applied to claim 1 above, and further in view of Yeh (6,112,266).

23. As per claim 5, Dagdeviren teaches two constellation indices that correspond to the two constellation points based on the received symbol (see claim 4 rejection above) but he fails to disclose interpolation of two constellation indices.

Yeh discloses constellation mapper (figure 2, element 242) that provides co-ordinates that include index 'j' in order to interpolate by shaping filter 244 (figure 2, col.5, lines 34-44) which reads on claim limitations of 'interpolate between the two constellation indices'.

It would have been obvious to one of the ordinary skill in the art, at the time invention was made, to implement the teachings of Yeh into Dagdeviren in order to create co-ordinate streams (claimed constellation points) which have narrow bandwidths as taught by Yeh (col.5, lines 36-47) in order to reduce the computational complexity with respect to constellation and thus increase system performance.

24. Claims 7 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851), as applied to claim 1 above, and further in view of Forney (WO 98/32257).

25. Refer to claims 7 & 8, in addition to aforementioned rejection of claim 2 above, Dagdeviren teaches all the limitations in the previous claim on which claims 7 & 8 depend but he fails to disclose four or more nearest cosets to the successive constellation indices.

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Forney discloses ^{plv} ~~is~~ reducing the constellation expansion by using 4D and nD trellis coding (page # 15, lines 17-28, page # 16, lines 1-5) which reads on claim limitations of 'coset selector circuit is arranged to determine about four or more nearest cosets to the successive constellation indices' & 'generate a sequence of trellis points based on the nearest cosets and one or more constellation indices corresponding to received symbols'.

It would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the teachings of Forney into Dagdeviren in order to reduce the constellation expansion so that the needed amount of gain can be achieved as taught by Forney (page # 15, lines 15-20) thus enhance system performance.

26. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in view of Forney (WO 98/32257), as applied to claims 1, 7 & 8 above, and further in view of Maurer et al. (6,418,170) (hereinafter, Maurer).

27. As per claim 9, Dagdeviren and Forney teach all the limitations in the previous claims on which claim 9 depends but they fail to disclose equivalence class index.

Maurer teaches, 'an equivalence class index mapper circuit to generate equivalence class indices from the sequence of trellis points (figure 1) & (figure 3, elements 30 & 32); and an inverse modulus encoder circuit connected to the equivalence class index mapper and arranged to generate data bits from the equivalence class indices' (figures 2 & 3, col.4, lines 12-45).

It would have been obvious to one of ordinary skill in the art, at the time of invention was made, to implement the teachings of Maurer into Dagdeviren and Forney

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in order to map the equivalence classes such that their identities are not lost during the phase reversal of the channel and thus prevent the communication channels from distorted transmission as taught by Maurer (see Abstract) and enhance system reliability.

28. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in view of Wei (5,953,376), as applied to claims 1, 4 & 10 above, and further in view of Yeh (6,112,266).

29. Claim 11 is rejected under the same rationale as mentioned in the rejections of claims 4 & 5 above.

30. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in view of Wei (5,953,376), as applied to claims 1 & 10 above, and further in view of Forney (WO 98/32257).

31. Claim 12 is rejected under the same rationale as mentioned in the rejection of claim 7 above.

32. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in views of Wei (5,953,376) & Forney (WO 98/32257), as applied to claims 1, 10 & 12 above, and further in view of Barabash et al. (5,640,417) (hereinafter, Barabash).

33. As per claim 13, Dagdeviren, Wei & Forney teach all the limitations in the previous claims on which claim 13 depends but they fail to disclose scaling.

Barabash teaches, 'calculating a scale value based on the two constellation

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points' (figure 5, elements 50 & 60, col.8, lines 20-34), 'generating a sequence of points based on the at least four nearest cosets, the scale value, and constellation indices corresponding to received symbols' (see claim 8 rejection above).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to implement the teachings of Barabash into Dagdeviren, Wei & Forney in order to determine the symbol variance and set the circular threshold for constellation points and enable the system to detect the symbols correctly as taught by Barabash (col.7, lines 26-39) thus increase the system reliability.

34. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in views of Wei (5,953,376), Forney (WO 98/32257) & Barabash et al. (5,640,417), as applied to claims 1, 9,10,12 & 13 above, and further in view of Maurer et al. (6,418,170).

35. Claim 14 is rejected under the same rationale as mentioned in the rejection of claim 9 above.

36. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in views of Wei (5,953,376) and Barabash et al. (5,640,417), as applied to claims 1-4 above, and further in view of Yeh (6,112,266).

37. Claim 15 is rejected under the same rationale as mentioned in the rejections of claims 2-5 above. It is also noted that Dagdeviren discloses steps of decoding the received signal by mapping them according to the constellation levels (see figure 6, col.11, lines 7-41) and in order to execute the steps the decoder of the receiving modem generates/manipulate received signal (claimed instructions for determination,

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identifications and interpolation between constellation points) (figure 6 & col.3, lines 33-46).

38. Claim 16 (in addition to aforementioned rejection of claim 15 above) is rejected under the same rationale as mentioned in the rejections of claims 5 & 6 above.

39. Claim 17 is rejected (in addition to aforementioned rejection of claim 15 above) is rejected under the same rationale as mentioned in the rejection of claim 1 above.

40. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in views of Wei (5,953,376), Barabash et al. (5,640,417) & Yeh (6,112,266), as applied to claims 1-5 & 15-17 above, and further in view of Forney (WO 98/32257).

41. Claim 18 is rejected under the same rationale as mentioned in the rejection of claim 8 above.

42. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dagdeviren (6,798,851) in views of Wei (5,953,376), Barabash et al. (5,640,417), Yeh (6,112,266) & Forney (WO 98/32257), as applied to claims 1-5 & 15-18 above, and further in view of Maurer et al. (6,418,170).

43. Claim 19 is rejected under the same rationale as mentioned in the rejection of claim 9 above. It is noted that in figures 2 & 3 Maurer is instructing the element 32 to decode equivalence class through trellis decoder 30 and reads on claim limitations of instructions for converting the sequence and decoding the equivalence class (col.4, lines 12-45).

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Contact Information

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naheed Ejaz whose telephone number is 571-272-5947. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Naheed Ejaz
Examiner
Art Unit 2611

N.E.
2/8/2007


PANKAJ KUMAR
PRIMARY PATENT EXAMINER